Remarks/Arguments

The Office Action of March 4, 2008 has been reviewed and carefully considered. Claims 53-56 remain canceled without prejudice. Claims 1, 16, 21, 42, 57, 68 and 76 have been amended. Claims 1-52 and 57-81 are now pending in this application.

Reconsideration of the above-identified application, as herein amended and in view of the following remarks, is respectfully requested. It should be noted that the Applicants are not conceding in this application that the amended claims in their prior form are not patentable over the art cited by the Examiner, as the present claim amendments have been made only to facilitate expeditious prosecution of the application. The Applicants respectfully reserve the right to pursue these and other claims in one or more continuation and/or divisional patent applications.

A. Rejections under 35 U.S.C. 112, First Paragraph

The Examiner has rejected claims 1-52 and 57-81 for failing to comply with the enablement requirement. Specifically, the Examiner has alleged that the Specification and the claims fail to teach how a scanning aperture plate is capable of providing a three-dimensional image display. In support, the Examiner cites a section of the Specification and states that a perspective view needs to be displayed on a display screen in a manner synchronized with the scanning apertures to provide a three-dimensional illusion. Further, the Examiner states that the claimed image display is therefore not enabling because it simply has an aperture plate scanning the plate.

The Applicant respectfully disagrees. In addition to an aperture plate and scanning apertures, a display is actively claimed. The specification describes how a three-dimensional image may be generated by employing a display and a scanning aperture plate with sufficient detail to enable one of ordinary skill in the art to make and use the invention (see, e.g., Specification, p. 13, lines 5-21). Thus, the Specification complies with the enablement requirement.

The Examiner also maintains that the Specification fails to teach that multiple different perspectives form perceived 3D images simultaneously viewable from respective multiple different user viewing angles. The Examiner asserts that only a single perceived three dimensional image is formed by essentially simultaneous viewing from respective different user viewing angles. In addition, throughout the office action, the Examiner has stated that it is not possible for multiple perspectives to form multiple perceived 3D images.

The Applicant respectfully disagrees. As discussed at length in the previous Response to the Office Action dated June 18, 2007 (see, e.g., p. 22, third paragraph), different perspectives are simultaneously viewable in that different observers may view different perspectives provided by a 3D display device at the same time. Similarly, a plurality of perceived three dimensional images is formed because multiple observers at different user viewing angles may view the multiple different perspectives. Thus, the feature of multiple different perspectives forming perceived 3D images simultaneously viewable from respective multiple different user viewing angles is enabled by the Specification (see, e.g., Response to the Office Action dated June 18, 2007, p. 22, third paragraph).

Regarding claim 76, the Examiner asserts that the Specification does not satisfy the enablement requirement, as the Specification fails to describe how a hybrid screen is formed. The Applicant respectfully submits that a hybrid screen as described in the Specification is known to those of ordinary skill in the art (see, e.g., Specification, p. 20, lines 17-22). One example of a hybrid screen is described in U.S. Patent No. 5,790,217 to Lee et al. As such, the Specification need not include a detailed description of how a hybrid screen is formed to satisfy the enablement requirement for claim 76.

Accordingly, withdrawal of the rejection is respectfully requested for at least the reasons discussed above.

B. Claim Objections

1. Objection to claims 1, 21, 42, 57, 68 and 76 (open apertures scan . . . .)

The Examiner has stated that the "phrase 'the open apertures scan the aperture plate (or the flat screen Ferroelectric LCD dynamic parallax barrier) to generate an illusion that the opaque areas are transparent,' recited in claims 1, 21, 42, 57, 68 and 76 is confusing." The Applicant respectfully disagrees. It should be noted that the claims should be interpreted in light of the Specification. In light of the Specification, it is respectfully submitted that the claim language is not confusing (see, e.g., Specification, p. 20, lines 5-21; p. 24, line 15 to p. 25, line 11). Accordingly, withdrawal of the objection is respectfully requested.

2. Objection to claims 1, 21, 42, 57, 68 and 76 (multiple different perspectives . . .

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The Examiner has objected to the phrase "multiple different perspectives that form perceived 3D images simultaneously viewable from respective multiple different user viewing angles." Specifically, the Examiner asserts that "'multiple different perspectives' should be stated as 'multiple different perspectives of a 3D object' and when 'simultaneously' viewed by viewer in synchronization with the opening of the scanning apertures form a single perceived 3D image." Regarding the first suggestion, the claims have been amended in a way believed to overcome the objection. With regard to the second suggestion, please see the discussion concerning the enablement requirement with respect to the multiple different perspectives clause. Accordingly, withdrawal of the objection is respectfully requested.

3. Objection to use of the word "sequencing" in claim 2.

Claim 2 stands objected to because use of the word "sequencing" is purportedly confusing. The sequencing of image portions on the display screen produces a perceived three-dimensional image, as the sequencing maintains a three-dimensional view during the scanning operation recited in claim 1, from which claim 2 depends (see also, e.g., Specification, p. 13, lines 11-21). Furthermore, image portions may correspond to 2-D images that may be behind each momentarily opened apertures, as discussed in the Specification (see, e.g., Specification, p. 13, lines 13-21). Accordingly, withdrawal of the objection of is respectfully requested.

4. Objection to the words "produce" and "capable of" recited in claim 5.

The Examiner has objected to claim 5 on two grounds: an aperture plate will not "produce" slit apertures; and the word "capable of" is confusing. The Applicant respectfully disagrees.

Claim 5 recites, inter alia: "three dimensional display device according to claim 1, wherein said aperture plate is capable of producing vertical slit aperture openings having a slit width." An aperture plate may "produce" slit apertures. For example, as described in the Specification, an aperture plate may comprise a liquid crystal display parallax barrier that may include discrete active regions that may be switched from being opaque to being transparent by the application of an electrical current (see, e.g., Specification, p. 28, lines 6-9). The active regions may be configured to form silt apertures (see, e.g., Specification, p. 28, lines 9-20). Thus, an aperture may indeed "produce" slit apertures.

Moreover, the phrase "capable of producing vertical slit aperture openings having a slit width" is a distinct property of the aperture plate. The metes and bounds of the claim are easily determinable by one of ordinary skill in the art. The phrase clearly describes an aperture plate that is readily adaptable to produce slit apertures. For example, the liquid crystal display parallax barrier described above may be readily adaptable to form aperture slits. Accordingly, withdrawal of the objection of is respectfully requested.

5. Objection to claim 16

Claim 16 has been amended in a way believed to overcome the objection. Withdrawal of the objection is respectfully requested.

6. Objection to the phrases "solid state scan type" and "solid state type"

The Examiner has objected to use of the phrases "solid state scan type" and "solid state type," alleging that the word "type" is indefinite. It should first be noted that "solid state type" is not recited in any of the claims. In addition, while the Applicants acknowledge that in some circumstances, use of the word "type" in claims may be indefinite, "solid state scan type" is not indefinite, as it is specifically defined in the Specification. The Applicants direct the Examiner's attention to p. 36, line 10 to p. 37, line 4 of the Specification, wherein solid state scan type aperture plates are discussed. The Specification defines a "scan type" as "the means by which an aperture is rapidly translated across a viewer's field of view" (Specification, p. 36, lines 11-2). Moreover, the Specification also describes solid state scan type aperture plates as being scan type aperture plates that do not have moving parts and provides examples of solid state scan type aperture plates (see, e.g., p. 36, line 14 to p. 37, line 4). Accordingly, the term "solid state scan type" does not render claims reciting the term indefinite. Withdrawal of the objection is respectfully requested.

7. Objection to "a hybrid screen," recited in claim 76

The Examiner has objected to claim 76, asserting that the term "hybrid" in the phrase "hybrid screen" is indefinite. Use of the term "hybrid" does not render claim 76 indefinite, as its meaning is clear in light of the Specification. The Specification states that "[t]he display 16 is preferably a high frame-rate video display device, and may employ any of a variety of display technologies. Examples of these technologies would be: High-speed liquid crystal display technology or Ferroelectric liquid crystal display (FLCD); Organic

LED technology; Miniature LED technology, plasma, zero twist nematic LC; rear projection using multiple projectors or a DLP mirror chip (described below); or a hybrid projection system based on the combination of any of these technologies" (emphasis added) (Specification, p. 20, lines 17-22). Furthermore, FIG. 14 illustrates an example of a hybrid screen, which is discussed on p. 21, lines 4-6: "a rear projection hybrid system using multiple LCD video projectors back lit by sequenced strobe lights being used as an alternative to a single high-speed display screen 16."

In addition, it should be noted that one of ordinary skill in the art would interpret "hybrid screen display," as recited in claim 76, to be equivalent to a "hybrid projection system," as recited in the Specification. As is known in the art, the term "screen" is commonly applied to many of the listed display technologies that may compose a hybrid projection system. Accordingly, the term "hybrid screen display" is not indefinite. Withdrawal of the objection is respectfully requested.

8. Objection to the phrase "capable of" as recited in claim 11

The Examiner states that "[t]he phrase 'capable of' recited in various claims is confusing and indefinite," and cites *In re Hutchison* for the proposition that use of the term capable of prevents patentability. However, under *Hutchison* and its progeny, the use of a term describing the configuration or capabilities of an element does not automatically bar the patentability of the claim. As long as the metes and bounds of the claim may be ascertained, the claim is definite enough for patentability.

Here, the use of the term "capable of" describes the resolution of the three-dimensional display being capable of displaying at least 8 viewing angles. The claim uses

the term "capable of" in such a way as to describe the limitations of its elements. "[C]apable of displaying at least 8 viewing angles" is a distinct property of a display, the metes and bounds of the elements are easily determinable.

Applicant, therefore, respectfully requests the withdrawal of the Examiner's objection to the use of the term "capable of."

C. Rejections under 35 U.S.C. 103(a)

Claims 1-2, 5-18, 20, 21-23, 26-32, 34-41, 42-44, 46-52, 68-75 and 76-81 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,6,74,463 to Just et al. (hereinafter Just).

Claim 1 includes the feature of:

> an aperture plate including apertures and opaque areas formed by closed apertures between open apertures that is disposed in front of said display screen, wherein the aperture plate is configured such that the open apertures scan the aperture plate in two-dimensional movements to generate an illusion that the opaque areas are transparent. . . .

It is respectfully submitted that claim 1 is patentable over Just, as Just fails to disclose or render obvious an aperture plate that is configured such that open apertures scan an aperture plate in two-dimensional movements to generate an illusion that opaque areas are transparent. The scanning apertures disclosed by Just move in a single dimension. As illustrated in FIGS. 7A and 7B of Just, for example, the scanning apertures move in one-dimension from left to right. Nowhere does Just disclose or remotely suggest apertures that scan in two-dimensional movements.

In contrast, according to one or more implementations of the present principles, open apertures of an aperture plate may be configured to scan an aperture plate in two-dimensional movements. For example, as depicted in FIG. 15 of the present application, an open aperture may translate across a two-dimensional region (see, e.g., Specification, p. 25, lines 5-11). Scanning an aperture plate in two-dimensional movements enables the display of large opaque areas at any moment, which permits a considerable number of perspectives to be displayed in both the vertical and horizontal directions, thereby providing a realistic three-dimensional view (see, e.g., response to the Office Action dated June 18, 2007, p. 28-29 (discussing the relationship between opaque areas and displayed perspectives)). For example, aspects of the present principles may be applied to display over one thousand perspectives at a time (see, e.g, Specification, p. 23, lines 20-22).

As stated above, Just does not disclose or suggest scanning an aperture plate in two-dimensional movements. Accordingly, claim 1 is believed to be patentable over Just at least because Just fails to disclose or render obvious an aperture plate that is configured such that open apertures scan an aperture plate in two-dimensional movements to generate an illusion that opaque areas are transparent. Thus, claim 1 is believed to be patentable over Just.

Similarly independent claims 21, 42, 57, 68 and 76 include the feature of scanning a display with open apertures in two-dimensional movements to generate an illusion that opaque areas of the display are transparent. Therefore, claims 21, 42, 57, 68 and 76 are believed to be patentable over Just for at least the reasons discussed above. Moreover, claims 2, 5-18, 20, 22, 23, 26-32, 34-41, 43, 44, 46-52, 69-75 and 77-81 are believed to be

patentable due at least to their dependencies from claims 1, 21, 42, 57, 68 and 76. Accordingly, withdrawal of the rejection is respectfully requested.

Claims 3, 4, 19, 24, 25, 33 and 45 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Just in view of U.S. Patent No. 6,094,216 to Taniguchi et al. (hereinafter 'Taniguchi').

Claims 3, 4, 19, 24, 25, 33 and 45 are dependent from claims 1, 21 and 42 and include all features recited therein. Claims 1, 21 and 42 include the feature of scanning a display with open apertures in two-dimensional movements to generate an illusion that opaque areas of the display are transparent. As discussed above, Just fails to disclose or render obvious at least this feature of the claims. Furthermore, Taniguchi does not cure the deficiencies of Just.

First, Taniguchi does not disclose or suggest scanning a display with open apertures to generate an illusion that opaque areas of the display are transparent. Second, Taniguchi also does not disclose or render obvious scanning a display with open apertures in two-dimensional movements. As illustrated in FIG. 4B, for example, Taniguchi simply discloses moving apertures to the left or the right in one-dimension. Taniguchi fails to disclose open apertures that scan a display in two-dimensional movements. Accordingly, Taniguchi does not cure the deficiencies of Just.

Thus, claims 3, 4, 19, 24, 25, 33 and 45 are believed to be patentable due at least to their dependencies from claims 1, 21 and 42. Withdrawal of the rejection is respectfully requested.

Conclusion

Based on the foregoing discussions and clarifications, reconsideration and withdrawal of the rejections is respectfully requested, and the application be passed to allowance, and letters patent issued in due course.

In the event that any additional fees or charges are required at this time in connection with the application, they may be charged to applicant's representatives Deposit Account No. 50-1433.

Respectfully submitted,
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Dated: June 4, 2008